

# Bladder Tumors

## Surgery Service



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## Anatomy

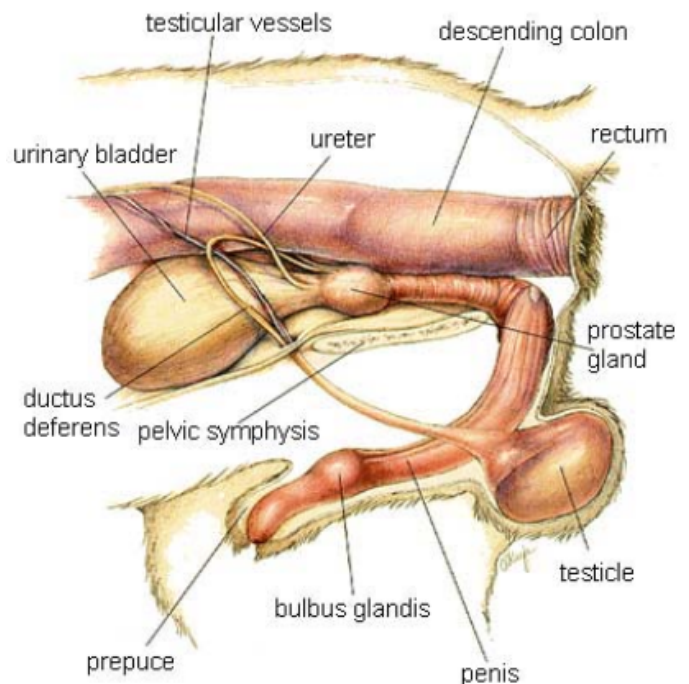
The urinary system consists of the kidneys, the ureters, the urinary bladder, and the urethra. The kidneys are the organs that filter the blood to remove wastes and maintain the electrolyte balance of the body. The filtered waste becomes urine, and travels to the urinary bladder through the ureters. The urine continuously collects in the bladder. The bladder is able to expand due to the special properties of its lining made of transitional cells. When an animal urinates the urine is voided from the body through the urethra.

## What is urinary tract cancer?

The most common type of urinary bladder cancer is transitional cell carcinoma (TCC). This is a tumor of the cells that line the urinary bladder. Other less common types of tumors of the bladder may include leiomyosarcomas, fibrosarcomas, and other soft tissue tumors. TCC can also arise in the kidney, ureters, urethra, prostate, or vagina. It can spread (metastasize) to the lungs, lymph nodes, bones, or other organs. Approximately 20% of dogs with bladder cancer have metastases at the time of diagnosis. Bladder cancer is much more common in dogs than cats. In dogs, TCC accounts for less than 1% of all reported cancers. TCC can occur in any breed, but is most common in Shetland sheepdogs, Scottish terriers, Wire-hair fox terriers, West Highland terriers, and Beagles. Middle-aged or elderly female dogs are most commonly affected. Some studies have suggested that exposure to certain chemicals (pesticides) may increase the risk for a dog to develop bladder cancer.

## Clinical signs

The symptoms of bladder cancer can be similar to those seen with urinary tract infections. These include small, frequent urination, painful urination, bloody urine, and incontinence. Symptoms will often improve initially with administration of antibiotics (as bladder infection is a common concurrent disease), but then recur a short time later. If lymph nodes in the abdomen become very enlarged, your companion may strain to defecate. Spread of tumor to bones can cause lameness or bone pain at these sites. A veterinarian may feel the tumor during abdominal palpation if it is large. If the tumor has spread to lymph nodes within the abdomen, they may be palpated during a digital rectal examination. If the bladder tumor invades into the urethra it can block urine flow and cause straining to urinate. If severe enough this can eventually lead to kidney damage and build up of waste products in the body. Complete inability to urinate is a medical emergency and should be addressed by a veterinarian immediately.



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# Bladder Tumors Continued...

## Diagnosis

Urinalysis: Pets with bladder cancer sometimes have cancer cells found in their urine. However, inflammation of the urinary tract from an infection can form similar kind of cells so this test is rarely diagnostic for bladder cancer. However, it does check for secondary infections of the bladder (due to the tumor) and helps to evaluate the health of the kidneys.

Blood work is often normal in pets with bladder cancer unless kidney function is impaired. In that case, your veterinarian may find that your pet has evidence of kidney dysfunction. Blood work is also important because it helps evaluate your pet's overall health, and may affect the best treatment option.

Veterinary bladder tumor antigen (VBTA) test: This is a screening test run on urine to check for bladder tumors in dogs. One of the pit falls of this test is that dogs without bladder cancer will test positive for VBTA, especially if there is a bladder infection.

Abdominal Imaging: Bladder tumors are rarely evident on normal x-rays, however spread of tumor to the bones may be evident. Sometimes special dye studies (cystograms) can be done to make the tumors visible on x-rays. This study is especially helpful if your veterinarian suspects that the tumor may be invading your pet's urethra. Another way to image the abdomen is with ultrasound. Ultrasound is helpful for looking at the size of the tumor within the bladder and the size of lymph nodes surrounding the tumor.

Chest Imaging: Since bladder cancers can spread to the lungs your veterinarian may take chest x-rays to check for metastases.

Biopsy: To definitively diagnose TCC of the bladder, a sample of cancerous cells must be evaluated. This is usually done with either a surgical biopsy or from cells collected through an ultrasound-guided urinary catheter. In female dogs, cystoscopy (camera is inserted into the bladder) is useful to directly visualize and biopsy the tumor. The biopsy will be sent to a pathologist to examine under a microscope.

## Treatment

Surgery: Surgical removal of the entire tumor is rarely possible. This is because the tumor usually arises where the ureters and urethra enter the bladder and surgery would disrupt these vital structures. Occasionally the tumor arises elsewhere in the bladder (especially in cats) and surgery can remove all or most of the tumor. When the tumor is only reduced in size at surgery this is called "debulking". Although it may temporarily relieve symptoms for the pet, the tumor will regrow.

Chemotherapy: Unfortunately, a chemotherapy protocol that works well for bladder cancers in pets has not yet been found. Less than 20% of pets will respond to the intravenous chemotherapy protocols currently used. An oral anti-inflammatory drug called piroxicam (Feldene) has also been shown to have some anti-cancer activity and may help some dogs and works best when combined with chemotherapy.

Radiation Therapy: Radiation therapy can be helpful in some patients with bladder cancer. Although some studies suggest it works better than chemotherapy it can have serious side effects (see below).

## Potential complications

Recurrent urinary tract infections and incontinence are common in dogs with TCC of the bladder. As bladder cancer enlarges in size it can obstruct the flow of urine. Inability to urinate is a medical emergency. When this



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complication is anticipated and a pet is otherwise healthy a procedure called a “tube cystotomy placement” can be considered. This involves surgically placing a tube that goes from the urinary bladder to outside the pet’s body through which urine can be emptied. Management of these tubes requires significant nursing care at home to regularly empty urine and prevent infections. Chemotherapy can cause bone marrow suppression leading to anemia and increased susceptibility to infections. Both chemotherapy and piroxicam can cause gastrointestinal (GI) side effects such as vomiting, diarrhea, or GI ulcers. Radiation therapy can have side effects such as narrowing the urethra (causing blockage) or incontinence.

## Aftercare

Pets with TCC of the bladder must be monitored closely at home for bladder infections (secondary to the tumor) or inability to urinate. Pets receiving chemotherapy or radiation therapy will need regular hospital stays for treatment. Pets receiving chemotherapy and piroxicam need frequent rechecks of their bloodwork to evaluate their kidney function. Repeated abdominal imaging studies are needed to follow the progress of the tumor and evaluate the effect of therapies. Pets with tube cystostomy require careful nursing care at home to keep their bladder emptied and their surgery site clean.

## Prognosis

The long-term prognosis for pets with bladder cancer is generally poor regardless of therapy. However, with treatment pets can have a better quality of life for a longer period of time. On average, dogs with TCC of the bladder live 4-6 months without treatment and 6-12 months with treatment.

## Reference

Henry CJ, McCaw DL, Turnquist SE, et al. Clinical evaluation of mitoxantrone and piroxicam in a canine model of human invasive urinary bladder carcinoma. Clin Cancer Res 9:906-911, 2003.



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## Assessment and recommendations

Patient: \_\_\_\_\_

Date: \_\_\_\_\_

### Treatment

- Surgery is recommended by a surgeon at Michigan Veterinary Specialists
- Surgery is not recommended
- Further evaluation by one of our oncologists is recommended

### The following has been prescribed

- No medications or special diet are necessary at this time
- Diet: \_\_\_\_\_
- Antibiotic: \_\_\_\_\_
- Nonsteroidal anti-inflammatory medication: \_\_\_\_\_
- Other medication: \_\_\_\_\_

### Preparation for surgery

- Start fasting your companion at midnight before surgery; water should not be withheld
- Pepcid AC 10 mg tablets: give \_\_\_\_\_ tablets with water (if needed use a syringe) at 6 AM on the day of surgery
- Other medications: \_\_\_\_\_

*Composed by Daniel A. Degner, DVM, DACVS  
Edited by Ned F. Kuehn, DVM, MS, DACVIM*



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